

STERNBERG, L.

Effect of corrosive media upon resistance of steel; a book review. p. 2

TEHNICA NOUA, Bucuresti, Vol 3, No. 35, Feb., 1956

SO: East European Accessions List (EEAL) Library of Congress, Vol 5, No. 7, July, 1956

KRATOCHVÍLOVÁ, E.; KRUPICKÁ, S.; STERNBERK, J.; ZITKA, B.

Time increase of induction in the manganese-copper ferrite
with rectangular hysteresis loop. Cs cas fys 14 no. 4:
293-302 '64.

1. Institute of Solid State Physics, Czechoslovak Academy of
Sciences, Prague.

Sternberg, M.

med ✓ Oxidative metabolism of anaerobic microorganisms by triphenyltetrazolium chloride. Eugenia Sora and M. Sternberg. *Acad. rep. populare Romine, Studii cercetarii chim.* 4, 263-70 (1958).—The reduction of triphenyltetrazolium chloride (TTC) by some anaerobic bacteria: *Clostridium tetani*, *C. perfringens*, *C. novyi*, and *Vibrio septicus*, in the presence of different substrates (amino acids, sugars, keto acids, tetracarbon diacids, amines, etc.) was studied. *C. perfringens* uses the largest spectrum of substrates for the reduction of TTC: amino acids (aspartic acid, glutamic acid, cysteine, histidine, methionine), sugars (glucose, galactose, ribose, arabinose, xylose, rhamnose, mannose, fucose, sucrose, lactose, maltose), acids (fumarate, lactate, malonate, succinate, pyruvic). *C. tetani* does not reduce TTC in the presence of amino acids, and *C. novyi* and *Vibrio septicus* do not reduce TTC in the presence of any of these substrates.

Martha Arco

STERNBERG, M.

✓ Colorimetric determination of penicillic acid. M. Sternberg. *Acad. rep. populare Romine, Simili cercetari chim.* 4, 315-20 (1966).—Penicillic acid gives with hydroxylamine a red color in strong alkali. The sensitivity of this color reaction 80 γ /ml. and its specificity permits the detn. of penicillic acid. The max. of the absorption spectrum is at 530 m μ and it follows Beer's law or concns. of 80-1000 γ /ml. The color is stable and very little or not influenced by light, temp., or inorg. ions. Only penicillic acid and acetylpenicillic acid give this color. This color reaction is not given by dibromopenicillic acid or by various other antibiotics (penicillin, streptomycin, aureomycin, chloromycetin, bacitracin).
Martha Arco

STERNBERG, M.

RESULTS/Microbiology - Murchies Pathogenic for Man and Animals.
Bacteria. Mycobacteria.

Abstr Jour : Ref Jour Biol., No 22, 1958, 9949A

Author : Kossou-Makassi, C., Diberville, A., Artiss-Sore, I.,
Dorville, G., Radulski, E., Quercet, G., Sternberg, M.

Instit : Russian Academy

Title : Complete Antigen of the diacid-lipido-nucleoprotein
Type Extracted from Tubercle Bacilli of the Human Type
H₃N₂.

Orig Pub : Canam. Acad. Res, 1956, 6, No 10, L245-L250

Abstract : The authors obtained a complex of the diacid-lipido-
nucleoprotein type by subjecting defatted microbe
cells to the action of a borate buffer (pH 8.2). The
obtained complex contains 30.4% of nucleic acids
(in nucleic acid and 15.9% of ribonucleic acid), 4%

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of reducing sugars and 9.7% of lipids. Following acid
hydrolysis of this complex, 13 amino acids were detected
with the aid of chromatography, among them 10.2% of aspartic
acid, 8.7% of glutamic acid, 10.2% of aspartic acid,
and 1.7% of glutamic acid. The complex contains 5.1%
of reducing sugars, 16.5% of amino acids, 10% of nucleic acids,
of enzymes, 3.3% of ribose and 2.8% of glucose. The
complex is split with the aid of electrophoresis into 4
fractions; they may be identified by the rate of migration
with the following serum proteins: gamma-globulin
(5%), gamma-globulin (5%), beta-globulin (15%), and
albumin (15%). The obtained complex possesses the pro-
perties of a complete antigen. Injected into rabbits,
it causes the appearance in the serum of precipitins
reacting with tuberculo-protein in dilutions of up to
1:6,250-1:12,500, and with the complete antigen in

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dilutions of 1:1,600-1:3,200. -- L.M. Model'

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IONESCU-MIHAIESTI, G.; DIMBOVICEANU, Aristia; SORU, Eugenia; RADULESCU, Elena;
BARBER, Cella; GANCEVICI, G.; OPRISCU, C.C.; FLECHNER, I.; STERNBERG, M.

Chemical and antigenic properties of protein fractions isolated from
filtrates of cultures of tubercle bacilli of the human type H₃₇v in
Sauton's medium. Stud. cercet. inframicrobiol., Bucur. 8 no.1:85-94 1957.

(MYCOBACTERIUM TUBERCULOSIS, culture

human type H₃₇v bact. cultured in Sauton medium, chem. &
antigenic properties of protein fractions)

(ANTIGENS

antigenic properties of protein fractions of M. tuberc.,
type H₃₇v, cultured in Sauton's medium)

(PROTEINS

protein fractions of M. tuberc., type H₃₇v, culture in
Sauton's medium, chem. & antigenic properties)

VALABEAS, M.
RUMANIA/Chemical Technology - Chemical Products and Their
Applications - Drugs, Vitamins, Antibiotics.

Abs Jour : Ref Zhur - Khimiya, No 11, 1958, 37204
Author : Ionescu, M., Waitman, R., Miss, A., Voinescu, R., Benis, B., Sternberg, M.
Title : Purification Methods of Penicillin.
Orig Pub : Rev. Chim. 1957, 8, No 5, 334-335
Abstract : Conditions for application of methods for penicillin G (I) purification
have been established. They are: Precipitation of the colored impurities
by acidification, recrystallization of (I) from butanol and isopropanol,
purification of N,N'-dibenzyl ethylenediamine dipenicillate.

RUMANIA / Chemical Technology, Chemical Products and Their Application, Part 3. - Drugs, Vitamins, Antibiotics.

H-17

Abs Jour : Ref Zhur - Khim., No 14, 1958, No 47777

Author : M. Sternberg, B. Benis, A. Solomon, Renee Ghimpu, Luliana Comu, A. Miss, I. Andronic, Ciocaneloa, A. Frialnic, Alice Ilion, Hermina Schreiber.

Inst : -

Title : Dicillin (Dipenicillinate of N,N'-Dibenzylethylenediamine).

Orig Pub : Rev. chin., 1957, 8, No 5, 339 - 341

Abstract : Methods of N,N'-dibenzylethylenediamine dipenicillinate preparation of crystalline penicillin G or various intermediate phases of its extraction or purification are described. Hints concerning the preparation of some Galenic forms (tablets and injection suspensions) and the methods of chemical and microbiological analyses are presented.

Card 1/1

STERNBERG, M.; VOINESCU, R.

A chromatographic determination of gibberellic acid. Folia
microbiol 6 no.3:189-191 '61. (E3A1 10:8)

1. Biosynthetic Section, Chemical Pharmaceutical Research Institute,
Bucharest.
(GIBBERELIC ACID) (CHROMATOGRAPHY)

STERNBERG, M.B.

VASIL'YEV, Ivan Mitrofanovich; GENKEL', P.A., professor, redaktor;
STERNBERG, M.B., redaktor; POLYAKOVA, T.V., tekhnicheskii
redaktor.

[Wintering of plants] Zimovka rastenii. Moskva, Izd-vo
Akademii nauk SSSR, 1956. 307 p. (MLRA 9:6)
(Plants--Frost resistance)

NONAY, Tibor.; STERNBERG, R.; KORNEL, ALICE.; KORNEL, Alice.

Surgery of vertical muscles of the eye. Szemeszet 91 no.4: 145-150
Nov 54.

1. A budapesti Orvostudományi Egyetem II. sz. Szemklinika-jának
közleménye (Igazgató: Nonay Tibor egyetemi tanár, az
orvostudományok kandidátusa)

(MUSCLES, OCULOMOTOR, surgery,
vertical musc.)

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B101/B220

5.3610

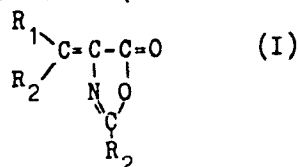
2209, 1375

AUTHORS: Ciorenescu, Caterina, Buchen-Bârlădeanu, Ludmilla
[Abstracter's note: or Bîrlădeanu], and Sternberg, René

TITLE: Synthesis of α -aminoketones

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,
no. 1, 1961, 144-148

TEXT: The authors mention the use of α -aminoketones as starting material for the synthesis of oxazoles which are used as scintillators. After mentioning the known methods of synthesis from α -haloketones, oximino ketones, oxime aryl sulfonates, N,N-dichloro-sec-alkyl amines, and N-acylated amino acid chlorides, they describe a simple method for the synthesis of aromatic α -aminoketones. Azlactones (derivatives of 5-oxazolone) were used as initial substances:



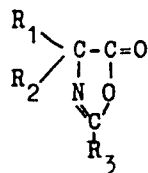
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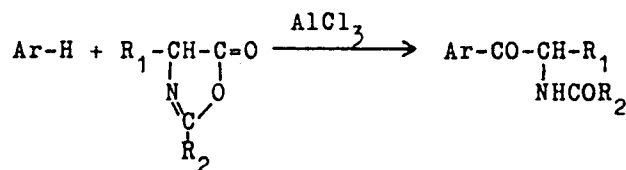
Synthesis of α -aminoketones

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and



(II). Saturated (II) is more reactive than unsaturated (I). It can be obtained by treatment of α -acyl amino acids or α -amino acids with acetaldehyde. Azlactones react with aromatic hydrocarbons in the presence of electrophilic catalysts ($AlCl_3$):



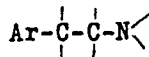
From this reaction the authors obtained α -acyl aminoketones by treatment of the n-benzoyl derivatives of glycine, alanine, α -aminobutyric acid, phenyl glycine, and phenyl alanine with acetaldehyde. If the low α -amino acids are treated directly with acetanhydride, it is difficult to separate the excess aldehyde from the azlactone. In the case of phenyl alanine, also α -amino indanone was formed owing to a side reaction. In the case of

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Synthesis of α -aminoketones

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higher homologs, there occurs only this reaction which will be dealt with elsewhere. Results are summarized in a table. Since all α -aryl aminoketones possess the group



which occurs also in adrenalin and ephedrine, the substances obtained will be studied as to their physiological effect. It is emphasized that the α -aminoketones are valuable intermediate products for the synthesis of derivatives of pyrrole, imidazole, and oxazole. The investigation will be continued with higher aromatic hydrocarbons with a view to obtaining α -acyl aminoketones with various aryl radicals, which can be produced by other methods only with difficulty and are able to serve as initial substances for the synthesis of bisubstituted oxazoles. There are 1 table and 16 references: 2 Soviet-bloc and 7 non-Soviet-bloc.

ASSOCIATION: Institute of Chemistry, Academy of the Rumanian People's Republic

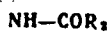
SUBMITTED: June 4, 1960

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Synthesis of α -aminoketones

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1 Исходные реактивы		Ar	R ₁	R ₂	Т. пл. °C /L	Выход %	Лите- ратура /Y
ароматиче- ская ком- понента	3 аминокислота						
4 Бензол	5 Гиппуровая	C ₆ H ₅	H	C ₆ H ₅	123	81	[11]
	6 N-бензоилаланин	C ₆ H ₅	CH ₃	C ₆ H ₅	103	82	[13]
	7 N-бензоил- α -аминомасля- ная	C ₆ H ₅	CH ₂ CH ₃	C ₆ H ₅	101	84	[14]
	8 N-ацетилфенилглицин	C ₆ H ₅	C ₆ H ₅	CH ₃	134	60	[15]
	9 N-бензоилфенилаланин	C ₆ H ₅	C ₆ H ₅ CH ₂	C ₆ H ₅	144	28	
10 Анисол	5 Гиппуровая	(CH ₃ O-C ₆ H ₄	H	C ₆ H ₅	113	10	
11 Тoluол		(HO-C ₆ H ₄	H	C ₆ H ₅	156	20	
	6 N-бензоилаланин	CH ₃ -C ₆ H ₄	CH ₃	C ₆ H ₅	113	81	[10]

Legend to the table: 1) initial substances; 2) aromatic component;
3) amino acid; 4) benzene; 5) hippuric acid; 6) N-benzoyl alanine;
7) N-benzoyl- α -aminobutyric acid; 8) N-acetyl-phenyl glycine;
9) N-benzoyl-phenyl alanine; 10) anisole; 11) toluene; 12) melting
point; 13) yield; 14) reference.

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AVRAM, Margareta; STERNBERG, Renée; DINULESCU, I.G.; NENITESCU, C.D., acad.

Condensation of 1,3-diiod-2-phenylpropane with ethyl malonate. Studii
cer chim 10 no.1:73-80 '62.

1. Centrul de cercetari chimice al Academiei R.P.R., Sectia de chimie
organica, Bucuresti. 2. Membru al Comitetului de redactie si redactor
responsabil, "Studii si cercetari de chimie" (for Nenitescu).

STANESCU, S.; MARGULESCU, I.

Thermodynamic properties of the binary salt mixtures in a dissolved state. I.
The AgCl-KCl system. In German. p. 251.

REVUE DE CHIMIE. JOURNAL OF CHEMISTRY. (Academia Republicii Populare Romine)
Bucuresti, Rumania. Vol. 2, no. 2, 1957.

Monthly List of East European Accessions (EEAI) IC, Vol. 8, no. 7, July 1959.

Uncl.

STEINBERG, S.; MORGENTHAU, I.; MARSHMAN, D.

Binary salt mixtures, and their thermodynamic properties when in liquid state. I. The AgBr-AgCl system. III. The AgCl-HCl and AgCl-PbCl₂ mixtures, and the determination of their activity by melting diagrams. IV. The AgCl/HCl system, and the determination of its thermodynamic activity by concentration chains. V. Melting diagrams as used in determining the thermodynamic activity of the following mixtures: AgBr/KBr, PbCl₂/LiCl, PbCl₂/NaCl, and PbCl₂/CaCl₂. In German. p. 47.

REVUE DE CHIMIE. JOURNAL OF CHEMISTRY. (Academia Republicii Populare Romine) Bucuresti, Rumania. Vol. 3, no. 1, 1958.

Monthly List of East European Accessions (EEAI) LC, Vol. 8, no. 7, July 1959.

Uncl.

3 G/A D
4 E 2 d (b)

4
New types of batteries with silver chloride depolarizer.
I. Primary batteries. S. Sternberg, S. Rottner, and
Victoria Leone. *Acad. rep. populare Romine, Studii cer-*
cidi chim. 7, 95-105 (1959).—A new type of primary bat-
tery is proposed with AgCl as depolariser; it has a con-
siderable advantage over MnO₂-depolarised, Leclanché-
type batteries. The current was practically const. through-
out discharge at large currents (up to 1/2 of nominal capac-
ity, as compared to 1-100 with Leclanché cells) with small
loss of capacity. Sp. capacity (based on wt. or vol.) was
larger. The depolariser was completely recoverable, trans-
forming through discharge into pure metal; the same was
true for the Ag leaf employed for conduction. The cell
was constructed of a 16 × 30-mm. Ag leaf on which an
AgCl layer had been laminated and a 30 × 10 × 0.5-mm.
Zn plate having its soln. side amalgamated. The electro-
lyte was regular Leclanché type, imbibed into a few paper
leaves. The cell was enclosed within a poly(vinyl chloride)
ring, and superposition of cells gave a battery of identical
and additive properties, i.e. current was const. and e.m.f.
was a multiple of the cell e.m.f. of a single cell. M. Lapidot

STERNBERG, S. ; CHEFORNIN, S.

Thermodynamic properties of the AgCl NaCl mixtures in a melted state, p.107.

STUDII SI CERCETARI DE CHIMIE. Bucuresti, Rumania
Vol. 7, No. 1, 1959.

Monthly List of East European Accession (EEAI). LC, Vol. 8, No. 9, Sept. 1959
Uncl.

SHTERNBERG, S. [Sternberg, S.]; GEORGIU, Steliana [Gheorghiu, Steliana]

Thermodynamic properties of the mixture $\text{AgCl} + \text{NaCl}$ in dissolved state. Rev chimie 5 no.1:119-128 '60. (EEAI 10:2)

1. TSentr khimicheskikh issledovaniy Akademii RNR, Bukharest.
(Mixtures) (Silver chloride) (Salt)

STERNBERG, S.; MARTA, Letitia

A method of determining the heat of fusion of the inorganic salts.
Rev chimie 5 no.2:281-288 '60. (EEAI 10:4)

1. Centre de Recherches Chimiques de l'Academie de la Republique
Populaire Roumaine, Section de Chimie physique.
(Inorganic compounds) (Salts)

STERNBERG, S.; MARTA, Letitia

A method of determining the heat of fusion of inorganic salts.
Studii cerc chim 8 no.3:437-444 '60. (EEAI 10:9)

1. Centrul de cercetari chimice, Sectia de chimie-fizica, Bucuresti.

(Salts) (Inorganic compounds) (Fusion)

TOPOR, Dumitru; STERNBERG, S.

Transport number in the aqueous solutions of CuCl_2 . Studii cerc
chim 8 no.3:445-449 '60. (EEAI 10:9)

1. Centrul de cercetari chimice, Sectia de chimie-fizica, Bucuresti.

(Solutions)	(Water)	(Copper chlorides)
(Ions)	(Electrolysis)	

MURGULESCU, I. G., acad.; STERNBERG, S.

Mixing heat of the binary melted salt mixtures. Rev chimie 6 no.1:
29-44 '61.

1. Abteilung fur physikalische Chemie, Chemisches Forschungszentrum
der Akademie der RVR, Bukarest. 2. Membre du Comite de redaction "Revue
de chimie" (for Murgulescu).

MURGULESCU, I. G., acad.; STERNBERG, S.

On the heat of the mixture of the binary systems of melted salts.
Studii cerc chim 9 no.1:39-54 '61. (KEAI 10:9)

1. Centrul de cercetari chimice al Academiei R.P.R., Sectia de chimie-fizica, Bucuresti. 2. Comitetul de redactie, Studii si cercetari de chimie (for Murgulescu).

(Mixtures) (Salts) (Heat)

STERNBERG, S.; MARCHIDAN, D.I.

Thermodynamic activity determined with ~~diagram~~ of fusion in the mixture of the melted salts forming chemical compounds. Studii cerc chim 9 no.4:653-661 '61.

1. Centrul de cercetari chimice al Academiei R.P.R., Sectia de chimie-fizica, Bucuresti.

(continued)
Alameda, California, U.S.A., June 29, 1967

8. Activity of bond π in water, as criterion of "bonding" ability. Prof. Dr. L. J. MULLIKEN, Department of Chemistry, Harvard University, Cambridge, Mass. 02138.
9. An analysis of the basic law of intermolecular light of solvent mixtures. Prof. Dr. H. H. GUNDEL, Department of Chemistry, University of California, Berkeley, Berkeley, California 94720.
10. On the energy of the π bond in alkenes. Prof. Dr. L. J. MULLIKEN, Department of Chemistry, Harvard University, Cambridge, Mass. 02138.
11. Transmutation of neopentyl isomers for solid polymers. Prof. Dr. L. J. MULLIKEN, Department of Chemistry, Harvard University, Cambridge, Mass. 02138.
12. "Recent of Ultraviolet Radiation on the Activity of some alkene Catalysts." Prof. Dr. A. ZEMSKY, Department of Chemistry, University of Innsbruck, Innsbruck, Austria.

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STEINBERG, S.

STERNBERG, S.; MEDINTEV, Ludmila

Determination of thermodynamic properties of molten salts by the oscillographical method; the mixture $\text{AgBr} + \text{AgCl}$ and the pure salts KBr and NaBr . Rev chimie 7 no. 1: 569-577 '62.

1. Chemical Centre of the Academy of the R. P. R. Bucharest.

SHTERNBERG, S. [Sternberg, S.]; MARKIDAN, D.I.

Determination of thermodynamic activity with the aid of fusion diagram, ~~for~~ the mixture of melted salts, forming chemical compounds. Rev chimie 8 no.1:115-121 '63.

1. Tsentr khimicheskikh issledovaniy Akademii RNR, Sektsiya Fizicheskoy khimii Bukharest.

✓ Spectrochemical analyses with special regard to light metals. Zdenko Sternberg. *Tehniki Pregled* (Zagreb) 4, 20-0 (1962). The basic principles and techniques of spectrography and methods of evaluating spectrograms are discussed. N. Playké.

STERNBERG, Z.,; TOMAS, P.

Excitation of helium atoms by the impact of deuterons and
rotons. Bul sc Youg 7 no.1/2:19 F-Apr '62.

1. Institut "Ruder Boskovic," Zagreb.

STERNBERG, Z. [translator]

The 5th International Congress for Clinical Chemistry. Croat chem
acta 34 no.3:A12 '62.

STERNBERG, Zdenko, cit. 1. 192.

Direct conversion. Nuklear energija 1 no. 2/3 34-36 '64.

Thermonuclear research. Ibid.: 43-4

1. Senior Technical Assistant and Head, Laboratory of the Physics of Ionized Gases of the Ruder Boskovic Institute, Zagreb.

JTB:WED, 1.

"Télécommunications et radiodiffusion." p. 27. (RISE HYPER, Vol. 2, no. 2, 1955, France.)

SO: Monthly List of East European Accessions, Vol. 2, #10 Library of Congress
October 1955, Incl.

STERNBERG, B.

"Color of stars." (p.151). RISE HVEZD. (Ceskoslovenska spolecnost astronomicka)
Praha. Vol. 34, No. 7, Sept. 1953.

SO: East European Accessions List, Vol. 3, No. 8, Aug 1954.

STERNBERK, Bohumil

Congress of the International Astronomical Union in Berkeley,
August 15-24, 1961. Poroky mat fyz astr 7 no.1:38-40 '62.

STERNBERG, J.

Ballistic demagnetizing factors for samples with rectangular cross sections [with summary in English]. Chekh.fiz.shur. 3 no.1:85-93 Mr '53.
(MLRA 7:6)

1. Institute of Technical Physics, Prague. (Electromagnetic theory)

STERNBERG, J.

" Experimental Confirmation of Arkad' ev's Proposition of the Straight-Line
Course of a Correction Curve," p.132.
(Casopis Pro Vystevani Fysiky, Vol.3, No.2, Apr. 1953, Praha.)

SO: Monthly List of ^{East European} ~~XXXXXX~~ ^{Vol.2, No.9} Accessions, /Library of Congress, September 1953, Uncl.

STERNBERK, Jiri.

Experimental verification of Arkadiev's assumption on the linearity of the displacement curve [with summary in English]. *Chekh.fiz.shur.* 3 no.2:151-161 Je '53. (MLRA 7:6)

1. Institute of Technical Physics, Prague.
(Electromagnetism) (Hysteresis)

STERNBERK, J

✓ 195. THE INFLUENCE OF DEMAGNETIZATION METHOD
ON THE PERMEABILITY OF IRON. J. Brož and J. Sternberk.
Czech. J. Phys., Vol. 5, No. 3, 426-8 (Aug., 1955). In
Russian.

It is sometimes thought that all methods of demagnetizing a specimen of iron, say, are equivalent. The authors' experiments, however, on Armco and other types of iron, show that specimens demagnetized by an alternating magnetic field possess thereafter higher permeability than the same specimens demagnetized by heating above the Curie point and slowly cooling to room temperature. Further, the higher the frequency of the alternating demagnetizing field, the higher the subsequent values of Δ_m plotted against H for the specimens when remagnetized. An explanation is put forward in terms of magnetic textures quoted in Vonzovskii and Shur's "Ferromagnetism".

C.R.S. Manders

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1000

RAW

1. *Journal of the American Medical Association*, 1997; 277: 1039-1043.

$$L_{\text{eff}} = L \left(1 - \frac{\alpha}{\beta} \right) + \frac{\alpha}{\beta} L_0$$

Journal of the American Statistical Association
Vol. 91, No. 434, 1996

199

1. *Journal of the American Medical Association*, 1997; 277: 1033-1036.

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STERNBERG, J.

Contribution to the study of ideal magnetization of manganese ferrite.

P. 142 (Ceskoslovenska Morfologie. Vol. 5, no. 4, 1957, Praha, Czechoslovakia)

Monthly Index of East European Accessions (EFAI) LC. Vol. 7, no. 2,
February 1957

STERNBERK, J.

21
~~✓ Ideal magnetization of manganous ferrite. Jih Stern-
 berk - Czechoslov. J. Phys. 7, 142-6 (1957).—The mag-
 netization of a Mn ferrite (Fe_2O_3 70.98, Mn 28.44, O 0.13,
 SiO_2 0.3%; outside diam. 10 mm.; inside diam. 6 mm.;
 height 4.5 mm.; 350 + 35 windings) was examd. with
 modification of the direction of the magnetic field. The
 main results are: max. permeability $\mu_{\text{max}} = 1120$; reman-
 ence = 2500 gauss; coercive force = 1.20 oe.; internal
 demagnetization factor 0.00110. From C.Z. 1958, 8832.~~
 T-V-Z

2
 1-JHJ(m)

AUTHOR: Šternberk, Jiří CZECH/37-59-3-16/29
TITLE: On the Problem of the Rectangularity of the Hysteresis Loop
of Manganese Ferrite (Letter to the Editor)
PERIODICAL: Československý časopis pro fysiku. 1959, Nr 3, p 320
ABSTRACT: The rectangularity of the hysteresis loop of ferrites is
influenced by magnetocrystalline and magneto-elastic aniso-
tropy as well as by porosity (Wijn et al - Ref 1). As a
measure for the porosity we have used (Refs 3,4,5) the
internal demagnetization factor.
The ratio B_r/B_{max} (remanent/maximum induction) was
independent of the chemical composition of the samples but
it was dependent on the internal demagnetization factor
 N_i (Figure 1).
The letter contains 1 figure and 6 references, of which
1 is English, 2 are Czech and 3 German. ✓

Card1/2


CZECH/37-59-3-16/29

On the Problem of the Rectangularity of the Hysteresis Loop of
Manganese Ferrite (Letter to the Editor)

ASSOCIATION: Ústav technické fyziky ČSAV, Praha (Institute of
Technical Physics, Czechoslovak Ac.Sc., Prague)

SUBMITTED: November 5, 1958

Card 2/2



STERNBERK, JIRI

CZECHOSLOVAKIA / Magnetism. Ferromagnetism.

F-4

Abs Jour : Ref Zhur - Fizika, No 3, 1957, 6846

Author : Sternberk, Jiri

Title : Methods of Studying Ferromagnetic Anisotropy

Orig Pub : Ceskosl. caslp fys., 1956, 6, No 4, 449-481

Abstract : Survey. The relationship between the energy of magnetic anisotropy and other magnetic properties is considered. Methods for the determination of the anisotropy constants are analyzed from the physical point of view, and a brief report is given on the results of a study of anisotropy in metallic and non-metallic ferromagnetics. Bibliography, 90 titles.

Card : 1/1

CZECHOSLOVAKIA/Magnetism - Ferrites and Ferrimagnetism.

Abs Jour : Ref Zhur - Fizika, No 6, 1959, 13245

Author : Sternberk, J.R.

Inst : Institute of Technical Physics, Czechoslovak Academy of Sciences, Prague.

Title : Concerning the Problem of Investigating the Ideal Magnetization of Manganese Ferrites.

Orig Pub : Chekhol. fiz. zh., 1957, 7, No 3, 339-343

Abstract : The author describes certain improvements in the well-known differential method of determining the ideal magnetization. The new measurement method is verified on two toroids of manganese-ferrite and homogeneity of the investigated material is studied on the basis of the internal demagnetization.

Card 1/1

STERNBERK, J.; BROZ. J.

Temperature dependence of the coefficients of rectangularity of manganese magnesium ferrites. p. 445

CESKOSLOVENSKY CASOPIS PRO FYSIKU. (Ceskoslovenska akademie ved. Ustav technicke fysiky) Praha, Czechoslovakia, Vol. 9, no. 4, 1959.

Monthly List of East European Accessions (EEAI), LC, Vol. 8m no. 10, Oct. 1959
Uncl.

✓ The temperature dependence of the rectangularity coefficients of manganese magnesium ferrite. 1. Brož and J. Šternberk (Czechoslov. Acad. Sci., Prague). *Czechoslov. J. Phys.* 9, 531-2 (1950) (in German).—B. and Š. detd. the 2 coeffs. of the rectangularity as functions of temp. and chem. compn. Previous explanations of these dependencies are discussed, and it is pointed out that present hypotheses are not sufficient to satisfactorily explain the anomalous observations. A. Krennheller

3

1-JAJ(MAY)

11
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227
Relation between rectangularity of the hysteresis loop of manganese magnesium ferrites and the internal demagnetization factor. Jaromír Brož and Jiří Šternberk (Czechoslov. Acad. Sci., Prague). *Czechoslov. J. Phys.* 9, 666-7 (1959) (in German).—In continuation of previous work (cf. preceding abstr.) the authors have studied ferrites of the comps. $Mn_{0.8}Mg_{0.2}Fe_{1.4}O_4$, $Mn_{0.6}Mg_{0.4}Fe_{1.4}O_4$, and $Mn_{0.4}Mg_{0.6}Fe_{1.4}O_4$. The results appear to indicate that the rectangularity should be 100% when the internal demagnetization factor is zero; the latter depends on the porosity of the material.

A. Krehmeller

3

1- JAJ(MAY)

40299

S/194/62/000/006/008/232
D222/D309

34.2200

AUTHOR: Sternberk, J.

TITLE: Effective anisotropy constant of polycrystalline nickel ferrite

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 6, 1962, abstract 6-1-73 u (Chekhosl. fiz. zh., 1961, B 11, no. 10, 766-768)

TEXT: The magnetic anisotropy constant is found for a nickel ferrite specimen in which the ratio of the iron to nickel cations is 2:0.936. When the anisotropy is calculated from the usual formula, starting from the cristalline structure of the alloy, the obtained anisotropy constant is negative, which has been repeatedly observed for heterogeneous magnetic alloys and was explained by the internal inhomogeneities of the material. For this reason a new model has been adopted, according to which the specimen consists of individual particles, and for each particle its surrounding is homogeneous and is regarded to be spherical. The field acting on each particle is increased by a factor $4/3\pi$ relative to the magnetization. Card 1/2

Effective anisotropy constant of ...

S/194/62/000/006/008/232
D222/D309

tion effect of the specimen surface. A spherical specimen was selected and the field causing the rotation process during remagnetization was measured directly between the poles of an electromagnet. The single-axis magnetic anisotropy constant obtained was 1.4×10^{-5} Oe/cm³ compared with -2.7×10^{-5} Oe/cm³ for ordinary crystalline anisotropy. The observed linear dependance of magnetization on the reciprocal of the squared magnetic field intensity of the external field remains almost constant for varying temperatures of the specimen. 5 references. [Abstracter's note: Complete translation.]

Card 2/2

L 05398-87 EWP(L)/ETI IJP(c) JD/WW

ACC NR: AP6029413 SOURCE CODE: CZ/0055/66/016/006/0536/0538

AUTHOR: Zitka, B. ; Sternberk, J.

ORG: Institute of Solid State Physics, Czechosl. Acad. Sci., Prague

TITLE: The behaviour of Mn-Cu ferrite simultaneously magnetized by a pulse and d-c field at a temperature of -195C

SOURCE: Chekhoslovatskiy fizicheskiy zhurnal, v. 16, no. 6, 1966, 536-538

TOPIC TAGS: magnetization, ferrite, magnetization curve, magnetic field

ABSTRACT: The effects of magnetization of polycrystalline Mn-Cu ferrite with an a-c field and a d-c field have been described in earlier studies. The present paper deals with experiments with the same ring-shaped ferrite which was subjected to the simultaneous action of an a-c and d-c field. The results of two series of experiments are given. A diagram showing the magnetization curves and the time dependence of induction at varying field and pulse intensities is presented. The authors thank Dr. E. Steinbeiss from the Institute for Magnetic Materials in Jena for valuable discussion. Orig. art. has: 1 figure.

SUB CODE: 20/ SUBM DATE: 31Dec65/ ORIG REF: 004/

Card 1/1

STANLEY, W.

Forgotten projects of Warsaw bridges. p. 354.

INZYNIERIA I PROJEKTOWANIE. Warszawa, Poland. Vol. 16, no. 9, Sept. 1959.

Monthly List of East European Accessions (EEAI) LC, Vol. 9, no. 2, Feb. 1960.
Uncl.

STERNER, Wacław (Warszawa)

Prefabricated ceiling to be used in general repair.
Przegł budowl i bud mieszk 34 no.6:324-327 Je '62

HONNIK, K., kand. tekhn. nauk; KALJUMAE, H., inzh. gidrotekhn.;
KASK, R., kand. sel'khoz. nauk; KATUS, A., inzh. lesnogo khoz.;
KILDEMAA, K., kand. geogr. nauk; KURKUS, J., agronom; LIPPMAA, A.,
inzh. gidrotekhn.; PANT, R., prepodavatel', agronom; RAIG, V.,
inzh. gidrotekhn.; REMEL, A., inzh. melior.; TALPSEPP, E., kand.
sel'khoz. nauk; SOOSAAR, V., inzh., lesnogo khoz.; STERNFELD, R.,
inzh. stroit.; TONINGAS, E., inzh. melior.; KARUS, G., red.;
RAUD, M., red.; VAHTRE, I., tekhn. red.

[Handbook for soil improvement] Maaparanduse kasiraamat. Tal-
linn, Eesti riiklik kirjastus. Vol.1. [Fundamentals of soil
improvement] Maaparanduse alused. 1962. 473 p. (MIRA 15:5)
(Soils)

STERNIK, A.M., inzhener.

~~_____~~
Remote control of tower cranes. Nov. tekhn. i pered.op. v stroi.
19 no.2:25 F '57. (MIRA 10:4)
(Cranes, derricks, etc.)
(Remote control)

STERNIK, E.

STERNIK, E. The influence of low temperatures upon the quality of
baker's yeast. p. 368. Vol. 10, no. 9 Sept. 1956
PRZEMYSŁ SPOŻYWCZY, Warsaw Poland

SOURCE: East European Accessions List (EEAL) Vol. 6 No. 4 April 1957

STERNIK, Klara; MARKOWIAK, Włodzimierz

Metabolism and physiological role of histamine in the organism.
Pol. tygod. lek. 19 no.5:186-188 30 Ja '64.

1. Z Zakładu Patologii Doświadczalnej Polskiej Akademii Nauk
w Warszawie (kierownik: prof. dr Z. Ruszczewski) i Pracownia
Patofizjologii (kierownik: doc. dr Cz. Maslinski)

20

STERNIN, B.B.

New Boiler Installation with Rapid Burners of the TSKTI System of V. V. Pomerantsev. (In Russian) V. V. Pomerantsev and B. B. Sterpin. *Kotloburbostruenie* (Boiler and Turbine Manufacture). Jan.-Feb. 1949, p. 13-14.

Describes and diagrams the above, particularly adaptable for burning of wood.

STERNIN, B.B., kand.tekhn.nauk

Boiler units with drying chambers for peat and wood wastes.
Energomashinostroenie 7 no.7:40-42 J1 '61. (MIRA 14:8)
(Boilers)

KORCHUNOV, Yu.N., kand. tekhn. nauk; STERNIN, B.B., kand. tekhn. nauk;
YEROFEYEV, P.A., inzh.; ILLENZEYER, I.Kh., inzh.

Adjustment and testing of the furnace system and dryer of the
DKV-6,5-13 boiler. Energomashinostroenie 9 no.10:41-43 0 '63.
(MIRA 16:10)

STERNIN, B. Yu.

General boundary value problems for elliptic equations in a
region bounded by manifolds of varied dimensionality. Dokl.
AN SSSR 159 no.5:992-994 D '64 (MIRA 1821)

1. Predstavleno akademikom I.G.Petrovskim.

CHUDIN, B.Yu.

General boundary value problems for elliptic equations in a region whose boundary consists of manifolds of different dimensionality. Vest. Mosk. un. Ser. 1: Mat., mekh. 20 no.2:16-21 MIRA 18:6) Apr 1965.

1. Kafedra differential'nykh uravneniy Moskovskogo universiteta.

DEMIN, G.V.; KAYVANOV, L.S.; SAKHANSKIY, N.A.; STERNIN, I.M.; YUKHTANOV,
D.M., kandidat tekhnicheskikh nauk, redaktor; PETROVA, N.S.,
tekhnicheskiiy redaktor

[High-speed smelting in a reverberatory furnace; experience of
skilled workman A.A. Iarusov] Skorostnaya plavka v otrazhatel'nykh
pechakh; opyt mastera A.A. Iarusova. Moskva, Gos. nauchno-tekhn.
izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1952. 68 p.
[Microfilm] (MIRA 9:12)

1. Russia (1923)- U.S.S.R.) Ministerstvo tsvetnoy metallurgii.
Tekhnicheskoye upravleniye. Tsentral'nyy institut informatsii.
2. Zamestitel' direktora instituta Otsvetmet (for Yukhtanov)
(Smelting furnaces)

FILYAND, Mikhail Abramovich; SEMENOVA, Yelizaveta Ivanovna;
POGODIN, S.A., zasluzhennyy deyatel' nauki i tekhniki RSFSR, professor doktor, retsenzent;
MEYERSON, G.A., prof., doktor tekhn. nauk, retsenzent;
ZELIKMAN, A.N., prof., doktor tekhn. nauk, retsenzent;
LOGINOV, A.B., red.; STERNIN, I.M., red.; KAMAYEVA, O.M., red.izd-va

[Properties of rare elements; a handbook] Svoistva redkikh elementov; spravochnik. Izd.2., perer. i dop. Moskva, Izd-vo Metallurgiya, 1964. 912 p. (MIRA 17:3)

KOSOV, V.V., red.; POLYAKOV, I.Ya., prof., doktor sel'skokhoz.nauk, red.;
STERNIN, I.V., red.; PECHENKIN, I.V., tekhn.red.

[Forecasting the appearance and calculating the prevalence of
plant diseases and agricultural pests] Prognoz poiyavleniya i uchet
vreditel'ei i boleznei sel'skokhoziaistvennykh kul'tur. Moskva,
Izd-vo M-va sel'.khoz. SSSR, 1958. 626 p. (MIRA 12:1)

1. Russia (1923- U.S.S.R.) Glavnaya gosudarstvennaya inspeksiya
po karantinu i zashchite rasteniy. 2. Nachal'nik Glavnoy gosu-
darstvennoy inspeksii po karantinu i zashchite rasteniy Minister-
stva sel'skogo khozyaystva SSSR (for Kosov). 3. Zaveduyushchiy
laboratoriyey prognozov razmnnozheniya massovykh vreditel'ey sel'sko-
khoz. kul'tur Vsesoyuznogo nauchno-issledovatel'skogo instituta
zashchity rasteniy (for Polyakov).
(Plant diseases) (Agricultural pests)

SOV/179-59-1-5/36

AUTHOR: Sternin, L. Ye. (Moscow)

TITLE: On Computing an ~~Axially~~ symmetrical Reaction Nozzle of Least Weight
(K raschetu osesimmetrichnogo reaktivnogo sopla naimen'shego
vesa)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh
nauk, Mekhanika i mashinostroyeniye, 1959, Nr 1, pp 41-45
(USSR)

ABSTRACT: It was found (Refs.1, 2, 3) that a short and therefore
light nozzle does not give the best results. Therefore, various
computations were performed in order to find the best charac-
teristics (Eqs. on p 41, where x, y - coordinates, p -
pressure of flow, ρ - density, p_0 - pressure resistance,
 w - velocity, θ - angle of velocity, α - angle between velocity and
a characteristic, a - critical velocity). The problem, how-
ever, can be considered when a characteristic AM (Fig.1) can
be found for a given weight. The pull of a curved section can
be calculated from Eq.(1.1) where R is the pull of section
OA. A condition of equilibrium can be expressed as Eq.(1.2)
and the weight by Eq.(1.3), where S_0 is weight of the section

Card 1/3

SOV/179-59-1-5/36

On Computing an Axially-symmetrical Reaction Nozzle of Least Weight

AB, S is a continuous function describing the relation of surface and wall thickness of the nozzle. The other characteristics can be described as Eqs.(1.4) and (1.7), from which Eqs.(1.8) to (1.13) for 3 points, BC, B and C are derived. Their solution based on the function $b_1(y) \equiv 0$ (Eq.1.14) (Refs.2-3), can be shown as Eqs.(1.15) to (1.17) with the parameters α, θ, x, y for points B and C calculated from Eqs.(1.18). It can be seen, then, that the solution can be found for any of the characteristics for a given weight, due to the differential equations (1.10), (1.8) and (1.9) being of first order. The Eq.(1.17) can also be found by a different method (Ref.2). This can be performed when the pull at a point dS near the end (Fig.2) is considered. Then the value of dP can be expressed as Eq.(2.1), which becomes Eq.(2.2) after differentiating for μ . From this, the Eq.(1.17) is obtained. It may happen that the nozzle has a predetermined length or is made from a prefabricated conic die stamping. In the former case $G = \gamma(S_0 + L)$ where γ is an index: when $\gamma = 1$, $S'_y(B) = 0$, $S'_L = 1$ (Ref.2). In the

latter,

$$G = \gamma \left\{ S_0 + \pi [y(B) + y(A)] \sqrt{L^2 + [y(B) - y(A)]^2} \right\}.$$

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SOV/179-59-1-5/36

On Computing an Axially-symmetrical Reaction Nozzle of Least Weight

In both cases the Eq.(1.17) should be changed accordingly. Often in calculations an equivalent of weight ξ , determining the ratio of pull to the weight is employed. This ratio is usually predetermined. In this case Eq.(1.11) is substituted by Eq.(4.1). There are 2 figures and 3 Soviet references.

SUBMITTED: June 4, 1958.

Card 3/3

26.2/61

S/C20/61/139/002/008/017
B104/B205

AUTHOR: Sternin, L. Ye.

TITLE: The boundaries of the domain of existence of shockless
nozzles of optimum design

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 139, no. 2, 1961,
335 - 336

TEXT: The variational problem concerning the optimum design of the super-
sonic section of an axisymmetric jet nozzle has been solved in several
articles (G. Guderley, Ye. Gantsh, Mekhanika, 53, no. 4, 387, (1956);
Yu. D. Shmyglevskiy, Prikl. matem. i mekh., 21, 195 (1957); L. Ye. Ster-
nin, Izv. AN SSSR, Mekh. i mashinostr., 41, no. 1, (1959)). The solution
is derived by assuming a given jet of the characteristic, which is pro-
duced by the flow past an angle Λ (Fig. 1). The best contour AB is ob-
tained as a solution to the Goursat problem between the characteristic
AC and the extremal characteristic CB. The equations on the extremal CB:

$$m_1 \cos \alpha + 27 \omega \cos(\alpha - \theta) = 0, \quad (1)$$

Card 1/4

The boundaries of the domain of...

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S/020/61/139/002/008/017
B104/B205

$$m_2 + 2\pi y \rho w^2 \operatorname{tg} \alpha \sin^2 \theta = 0, \quad (2)$$

are now investigated. Here, α is the angle between the velocity and the characteristic, θ the angle of inclination of velocity toward the x-axis, w the velocity, ρ the density, and m_1 and m_2 are constant Lagrange factors. From Eqs. (1) and (2) it follows that

$$y = -\frac{4\pi m_2}{\rho \sin 2\alpha} \left(\frac{m_1 \sin \alpha \pm \sqrt{4\pi^2 w^2 - m_1^2 \cos^2 \alpha}}{m_1^2 - 4\pi^2 w^2} \right)^2, \quad (3)$$

is valid on the extremal. The plus sign is taken for $\alpha(C) \leq \theta(C)$, and the minus sign for $\alpha(C) > \theta(C)$, since Eq. (3) must be fulfilled at point C. It can easily be shown for $\alpha(C) = \theta(C)$ that α and θ decrease along the extremal with growing y . For $\alpha(C) < \theta(C)$ α increases and θ decreases. At a definite point, α is equal to θ . When calculating other extremals, the sign of the radical in Eq. (3) has to be changed. As a result, the velocity distribution along the extremal of the characteristic will become

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The boundaries of the domain of...

non-monotonic. It follows from Eq. (3) that $dy/da|_C$ will decrease when point C shifts along the characteristic ACP toward smaller values of x (within the range $\alpha < \theta$). At a certain value of C_0 , the value of this derivative will pass through zero and then remain negative. In terms of geometry, this can be interpreted as a loop near the base of the extremal. From a physical point of view, however, this means that it is impossible to derive a "shockless" solution for the variational problem for all points of the characteristic ACP on the left-hand side of C_0 , which might serve as starting points for the construction of the extremal. If α decreases along the extremal with growing y , the largest thrust will not be attained. If, using conditions (1) and (2), the derivative of the right-hand side of Eq. (3) is put equal to zero, a straightforward expression connecting α and θ on the line AC_0 will be obtained for a gas current with constant κ with the aid of well-known formulas expressing ρ and w in the terms of α :

$\kappa \sin\theta \sin(\alpha + \theta) - \cos\alpha \sin^2 2\alpha + \sin\theta \sin(\theta - \alpha) - \sin\alpha \sin 2\theta \cos 2\alpha = 0.$
On the left-hand side of this line, there exist no "shockless" solutions

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B104/B205

X

The boundaries of the domain of...

for the variational problem. Yu. D. Shmyglevskiy is thanked for assistance. [Abstracter's note: Complete translation.] There are 1 figure and 4 references: 3 Soviet-bloc and 1 non-Soviet-bloc. The reference to English-language publications reads as follows: G. V. R. Rao, Jet Propulsion, no. 6, 377, (1958).

PRESENTED: November 9, 1960, by V. P. Glushko, Academician

SUBMITTED: November 5, 1960

Card 4/4

SHAPIRO, M.L., STROGAN, S.re.

Mathematical analysis of the changes in body weight in complete
alimentary starvation in man. Pat. Fiziol. i eksp. terap. 9
no.2:66-68 Mr-Apr '65. (MIRA 18:5)

1. Nauchno-issledovatel'skiy institut psikiatrii (dir. - prof.
D.D.Pedatov) Ministerstva zdravookhraneniya RSFSR, Moskva.

L 59221-65 EWT(1)/EWP(m)/EWA(d)/FCS(k)/EWA(1) Pd-1

ACCESSION NR: AP5014933

UR/0040/65/029/003/0418/0429

AUTHORS: Krayko, A. N. (Moscow); Sternin, L. Ye. (Moscow)

TITLE: On the theory of flows of a two-speed continuous medium with solid or liquid particles

SOURCE: Prikladnaya matematika i mekhanika, v. 29, no. 3, 1965, 418-429

TOPIC TAGS: viscous gas flow, particle motion, continuity, continuous flow method, flow research

ABSTRACT: The problem of movement of a continuous medium having extraneous matter is described by means of a model of a two-speed continuous substance. Several conditions are established for the purpose of clarifying the model: 1) the particles are identical spheres and collisions among the spheres can be ignored; 2) distances along which the flow characteristics are actually measured are a great deal larger than interparticle distances; 3) the Mach number of relative particle motion is less than critical. It is furthermore assumed that viscosity and thermal conduction are important only in processes of gas and particle interaction. The equations of motion and particle energy are given as

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$$(\mathbf{V}_d \nabla) \mathbf{V}_d + \frac{\partial \mathbf{V}_d}{\partial t} + \frac{1}{\rho_d} \nabla p - \mathbf{f} - \mathbf{F}_d = 0$$

$$\mathbf{V}_d \nabla e_d + \frac{\partial e_d}{\partial t} - q - Q_d = 0$$

$$\mathbf{f} = \varphi^1 \cdot |\mathbf{V} - \mathbf{V}_d|^n (\mathbf{V} - \mathbf{V}_d), \quad q = \varphi^k \cdot (T - T_d)^k$$

$$T_d = T_d(e_d), \quad \varphi^i = \varphi^i(p, T, T_d, |\mathbf{V} - \mathbf{V}_d|), \quad n > -1, \quad k > 0$$

The notation used includes: m - mass, ρ_d - constant density, \mathbf{V}_d - velocity, T_d - particle temperature, p - pressure, T - gas temperature, \mathbf{V} - gas velocity, and t - time. An aggregate stream flow density is derived by considering mass transfer through an infinitesimal volume element. The equations of mass conservation are given in integral form for both gas and particles as

$$\iiint_V \frac{\partial \rho}{\partial t} d\tau + \iint_S \rho \mathbf{V} n dS = 0, \quad \iiint_V \frac{\partial \rho_d}{\partial t} d\tau + \iint_S \rho_d \mathbf{V}_d n dS = 0$$

where \mathcal{V} is an arbitrary volume bounded by S , and n is the internal normal to S . The equations of conservation and motion within the control surface S are elaborated to include heat flow and work considerations. The mathematical model

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is derived through the application of several transformations. It is then tested and appraised as it applies to several particular cases (presence and/or absence of certain types of flow). Additional discussion is devoted to conditions of two-dimensional and symmetric flow. The authors thank G. M. Bam-Zelikovich and G. G. Chernyy for their constructive criticisms. Orig. art. has: 42 equations.

ASSOCIATION: none

SUBMITTED: 13Dec64

ENCL: 00

SUB CODE: ME

NO REF SOV: 006

OTHER: 008

dm
Card 3/3

L (SM)12-67 EWP(m)/EWT(d)/EWT(1)/EWT(m)/EWP(w)/EWP(v)/EWP(k) IJP(c)
ACC NR: AP6034533 SOURCE CODE: UR/0421/66/000/005/0014/0022

AUTHOR: Sternin, L. Ye. (Moscow)

ORG: none

TITLE: Extremal nozzle contours for gas flows with particle lag

SOURCE: AN SSSR. Izvestiya. Mekhanika zhidkosti i gaza, no. 5, 1966, 14-22

TOPIC TAGS: contoured nozzle, Laval nozzle, nozzle design, two phase flow, nozzle flow, particle lag loss

ABSTRACT: An analysis was made of one-dimensional two-phase flow in a Laval nozzle at a small lag of the temperature and velocity of the particles with respect to the gas. The variational problem to determine the maximum impulse of the nozzle was formulated along the contour for a given geometric expansion. The impulse losses due to the nonparallelism of the flow were simulated by a function which depends on the variable ordinate of the contour and the inclination angle of the tangent to the contour. Instead of using the pressure as an argument in the expansion series of expressions for the flow parameters as in previous studies, the nozzle ordinate was used. The following expressions were obtained for the pressure, velocity, and temperature:

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ACC NR: AP6034533

$$\begin{aligned} \frac{p}{p_0} &= 1 + \frac{ew}{1+w} \frac{2\kappa}{\kappa+1} \frac{L_0}{l(1-\lambda^2)} \left\{ \lambda^{1/2} - (1+\gamma\lambda^2) \left[L(\lambda) - \frac{l}{L_0} \frac{\xi}{2\gamma} \right] \right\} \\ \frac{u}{u_0} &= 1 + \frac{ew}{1+w} \frac{T(\lambda)L_0}{l(1-\lambda^2)} \left[\frac{2\kappa}{\kappa+1} L(\lambda) - \frac{\kappa}{\kappa-1} \frac{l}{L_0} \xi - \lambda^{1/2} \right] \\ \frac{T}{T_0} &= 1 + \frac{ew}{1+w} \frac{2\gamma L_0}{l} \frac{\lambda^2}{1-\lambda^2} \left[\frac{1+\lambda^2}{2\sqrt{\lambda}} + \frac{\kappa}{\kappa-1} \frac{l}{L_0} \xi - \frac{2\kappa}{\kappa+1} L(\lambda) \right] \end{aligned}$$

where $\varepsilon = a_0/u$ (u is a parameter proportional to the square of the particle radius, a_0 is the equilibrium gas velocity in the nozzle throat), w is the particle flow rate, and $\lambda = u_0/a_0$ (reduced velocity). The following two equations were derived for calculating the contour:

$$x = l \int_{\lambda_0}^{\lambda} \frac{\sqrt{\lambda [1 + \gamma(2\eta-1)\lambda^2]}}{1-\gamma\lambda^2} d\lambda \left\{ \int_{\lambda_0}^{\lambda} \frac{\sqrt{\lambda [1 + \gamma(2\eta-1)\lambda^2]}}{1-\gamma\lambda^2} \right\}^{-1} \quad (1)$$

$$\begin{aligned} 2 \left(\frac{\kappa+1}{2} \right)^{\frac{\kappa-1}{\kappa+1}} (1-\gamma\lambda^2)^{\frac{\kappa-1}{\kappa+1}} \left\{ \frac{1+w}{ew} \cdot \frac{\kappa+1}{2\kappa} + \frac{1}{1-\lambda^2} \left[\frac{\xi}{2\gamma} (1+\gamma\lambda^2) + \frac{\lambda^2 H(\lambda)}{T(\lambda) dx/d\lambda} \right] \right. \\ \left. - (1+\gamma\lambda^2) \int_{\lambda_0}^{\lambda} \frac{\lambda H(\lambda) d\lambda}{T^2(\lambda) dx/d\lambda} \right\} + \frac{H(\lambda)}{T(\lambda) (dx/d\lambda)^2} \left[1 + \frac{\lambda}{T(\lambda)} \times \right. \\ \left. \times \left(R_1^0 + \int_{\lambda_0}^{\lambda} \frac{1+\gamma\lambda^2}{\lambda^3} d\lambda \right) \right] = \text{const}, \quad R_1^0 = R_1(\lambda_0) \end{aligned} \quad (2)$$

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AP6034533

where l is the length of the nozzle, κ is the specific heat ratio, and $\eta = c/c_p^x$, $c_p^x = c_p + w/l + w$. The calculated contours are shown in Fig. 1. The nozzle contour calculated by equation (2) has smaller

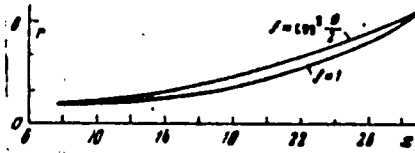


Fig. 1. Nozzle contours.

losses than those calculated by equation 1 due to the nonparallelism and particle lag, although the losses are quite large for both contours. Calculations, made by the equation

$$s = \int_{r_0}^r \sqrt{C(pr)^{1/\kappa} - 1} dr$$

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ACC NR: AP6034533

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for a flow without particles, showed that the maximum difference between given ordinates of the contour amounts only to +0.3. Orig. art. has: 45 formulas and 2 figures.

SUB CODE: 21/ SUBM DATE: 25Feb66/ ORIG REF: 005/ OTH REF: 008/
ATD PRESS: 5103

Card h/h

LS

MARTYNCHEV, A.N., kand.med.nauk (Leningrad, ul. Novostroyek, d.8, kv.3);
STERNIN, M.A.; KOSTIN, B.D.

Dynamics of venous pressure in patients during surgery under various
types of anesthesia. Vest.khir. 83 no.8:107-115 Ag '59.

(MIRA 13:1)

1. Iz gospi'tal'noy khirurgicheskoy kliniki (zav. - prof. A.V. Smirnov)
i fakul'tetskoy khirurgicheskoy kliniki (zav. - prof. P.N. Napalkov)
Leningradskogo sanitarno-gigiyenicheskogo meditsinskogo instituta.
(ANESTHESIA eff.)
(BLOOD PRESSURE physiol.)

BROVERMAN, Mikhail Vladimirovich; STERNIN, M.G., inzh., retsenzent;
KACHURINER, Ya.A., inzh., red.; BORODULINA, I.A., red.izd-va;
FRUMKIN, P.S., tekhn.red.

[Technology of the manufacture of centrifugal compressors]
Tekhnologiya proizvodstva tsentrobezhnykh kompressornykh
mashin. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry,
1960. 220 p. (MIRA 13:4)
(Compressors)

S/114/60/000/003/005/008
E194/E355

AUTHORS: Libman, S.Ye., Pachin, V.Kh., Sternin, M.G.
and El'tsufin, S.A., Engineers

TITLE: Casting of Nozzle Segments of Steam Turbine
Type БНТ-50 (VPT-50) by the Lost-wax Method

PERIODICAL: Energomashinostroyeniye, 1960, No. 3,
pp. 35 - 37

TEXT: The nozzles of the high-pressure cylinder of turbine VPT-50 operate on steam at a pressure of 90 atm. and a temperature of 535 °C. The nozzle boxes consist of four separate segments wherein milled blades were mounted on machined rims and welded. The parts were made of forgings of steel grade 15X11MΦ (15Kh11MF). After welding, the duct sizes were corrected by hand fitting. To economise in cost, labour and metal the Leningrad Metal Works introduced the lost-wax method of casting nozzle-box sections. The cast segments have the ends cut off and are then butt-welded together. The patterns for the blade holders are made of a mixture of 96% technical urea and 4% boric acid. Those for
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Casting of Nozzle Segments of Steam Turbine Type VPT-50 by
the Lost-wax Method

the blades are made in a presstool with a mixture of 50%
paraffin wax and 50% stearine. When the pattern has been
assembled in the mould the urea part can be dissolved out
with water.

The wax surface is treated with a ceramic paint consisting
of 33% by weight hydrolised ethylsilicate and 67% marshalite,
which is natural quartz dust. Six layers of ceramic paint
are applied to the pattern. It is then dried, first in air
and then in an ammonia chamber. Next, the wax pattern is
melted out of the mould in hot water at 80 - 90 °C. The
mould is then dried at 200 °C in an electric furnace. The
mould is reinforced with sand and hardened by heating in an
electric furnace for six hours.

The nozzle segments are cast of steel grade 15X11MΦ7
(15Kh11MFL) which is of sorbitic structure. After preliminary
cleaning up the castings are heat-treated by a process which


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Casting of Nozzle Segments of Steam Turbine Type VPT-50 by the Lost-wax Method

is described. Castings obviously defective are rejected by visual examination; final examination is by X-ray inspection and etching. Development experience that led to the use of the formulations and procedures given is briefly described. The shrinkage allowance is stated, and the method of controlled cooling used to avoid cracks is described.

By using casting instead of welding and milling, the weight of the normal segments on a turbine was reduced from 710 to 172 kg, the labour required was reduced from 1 730 to 840 man hours and the cost from 25 827 roubles to 13 387 roubles. There are 5 figures.



Card 3/3

STERNIN, M.O.

Subcutaneous rupture of the retroperitoneal portion of the duodenum.
Vest.khir. 77 no.5:83 My '56. (MLBA 9:8)

1. Iz 2-go khirurgicheskogo otdeleniya (zav. otd. D.S.Landeman)
Pakovskoy oblastnoy bol'nitsy (gl. vrach. I.I.Saltan, nauchn.
rukovoditel' V.V.Krestovskiy)
(DUODENUM, rupture,
retroperitoneal subcutaneous (Rus))

STERNIN, M.O.

STERNIN, M.O. (Pskov, Bol'nichnaya ul., d.1)

Pathogenesis and clinical aspects of occlusion of the mesenteric vessels [with summary in English]. Vest.khir. 79 no.8:57-61 Ag '57.
(MIRA 10:10)

1. Iz 2-go khirurgicheskogo otdeleniya (zav. - D.S.Landsman)
Pskovskoy oblastnoy bol'nitsy (nauchnyy rukovod. - dotsent V.V.
Krestovskiy)

(ARTERIES, MESENTERIC, dis.

occlusion, pathogen. & clin. aspects)

STERNIN, M.O.

Sodium thiopental anesthesia in patients with liver function
disorder. Vest. khir. 84 no. 4:94-100 Ap '60. (MIRA 14:1)
(THIOPENTAL) (LIVER—DISEASES)

STERNIN, M.O.

Histochemical data on the effect of various pharmacological substances used in anesthesiology on the depot glycogen of the liver. Vest.khir. 85 no.11:116-123 N '60. (MIRA 14:2)

1. Iz gosspital'noy khirurgicheskoy kliniki (zav. - zasluzh. deyatel' nauki prof. A.V. Smirnov) Leningradskogo sanitarno-gigiyenicheskogo meditsinskogo instituta.
(LIVER) (GLYCOGEN) (ANESTHETICS)

STEREIN, M.O., Cand. Med. Sci., -- (diss) "Anesthetization during operations in patients with mechanical jaundice," Leningrad, 1961, 20 pp (Leningrad State Institute for the Advanced Training of Physicians im S. M. Kirov) 300 copies (KL-Supp 961, 192)

DENISENKO, P.P.; STERNIN, M.O.

Use of central cholinolytic drugs in anesthesiology. Vest.khir.
no.4:93-97 '61. (MIRA 14:4)

1. Iz otdela farmakologii (zav. - prof. S.V. Anichkov) Instituta
eksperimental'noy meditsiny AMN SSSR i gosspital'noy khirurgiche-
skoy kliniki (zav. - prof. A.V. Smirnov) Leningradskogo sanitarno-
gigiyenicheskogo meditsinskogo instituta.
(PARASYMPATHOLYTICS) (PREOPERATIVE CARE)

STERNIN, M. O.

Shock and hepatorenal insufficiency in pancreatoduodenal resections. Khirurgiia 37 no.7:93-98 J1 '61. (MIRA 15:4)

1. Iz gosspital'noy khirurgicheskoy kliniki (zav. - zasluzhennyi deyatel' nauki prof. A. V. Smirnov) Leningradskogo sanitarnogigiyenicheskogo meditsinskogo instituta.

(PANCREAS SURGERY) (DUODENUM SURGERY)
(LIVER) (KIDNEYS)

STERNIN, M.O.,; MOTOVILOV, P.Ye, kand.med.nauk

Intravenous anesthesia with methygenal (thiogenal). Vest.khir.
86 no.2:67-70 '61. (MIRA 14:2)

1. Iz gosspital'noy khirurgicheskoy kliniki (zav. -- prof. A.V.
Smirnov) Leningradskogo sanitarno-gigiyenicheskogo meditsinsko-
go instituta i otdela farmakologii Instituta eksperimental'-
noy meditsiny AMN SSSR.
(BARBITURATES) (INTRAVENOUS ANESTHESIA)

STERNIN, M.O.

Minutes of the 38th and 39th sessions of the Anesthesiological
Section of the Pirogov Surgical Society. Vest.khir. 87 no.11:
148-151 N '61. (MIRA 15:11)
(SURGICAL SOCIETIES)

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anesthesia in a clinical clinic." Vest. Khir. 93 no. 1:122-123
1974. (RINA 12/74)

LYSENKO, T.D.; OL'SHANSKIY, M.A.; SINYAGIN, I.I.; GLUSHCHENKO, I.Ye.;
VARJUNTSYAN, I.S.; PREZENT, I.I.; SHCHERBINOVSKIY, N.S.; SHUNKOV,
V.I.; YEVSTIGNEYEV, S.N.; BOCHEVER, A.M.; LITVIN, V.M.; YAYKOVA,
A.T.; PODVOYSKIY, I.I.; SAKS, Ye.I.; KHALIFMAN, I.A.; FETGINSON,
N.I.; SHCHEGLOVA, Yu.N.; DLUGACH, G.V.; STERNIN, R.A.; LISOVSKAYA,
O.V.; GUBINA, T.I.; ROZENFEL'D, M.I.; TSVETAIEVA, Ye.M.; PARKHO-
MENKO, Ye.V.; NEYMAN, N.F.

Sofia Iakovlevna Voitinskaia; an obituary. Agrobiologiya no.4:121
J1-Ag '58. (MIRA 11:9)
(Voitinskaia, Sofi'ia Iakovlevna, 1898-1958)